COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Piedmont Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Virginia Electric & Power Company
Gravel Neck / Surry Power Station
Surry, Virginia
Permit No. PRO50336

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Virginia Electric & Power Company has applied for a Title V Operating Permit for its Gravel Neck / Surry Power Station located in Surry, Virginia. The Department has reviewed the application and has prepared a Title V Operating Permit.

Engineer/Permit Contact: _____ Date: _____

Air Permit Manager: _____ Date: _____

Deputy Regional Director: _____ Date: _____

FACILITY INFORMATION

Permittee
Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060

Facility
Gravel Neck /Surry Power Station
Route 650
Surry, Virginia 23883

NET Facility ID No. 51-181-0002
ORIS Code: 7032

SOURCE DESCRIPTION

SIC Code: 4911 - Electric Services (Establishments engaged in the generation, transmission, and/or distribution of electric energy for sale).

The Gravel Neck /Surry Power Station is actually two electric power generating facilities under common ownership located on contiguous properties. The Surry Power Station is a nuclear-powered electric generating facility, which is regulated by the US Nuclear Regulatory Commission. There are two 90.6 mmBtu/hr Babcock & Wilcox distillate oil-fired backup boilers at the Surry Power Station, each capable of producing 80,000 pounds of steam per hour. These backup boilers were constructed in 1969 and are subject to the existing source regulations (9 VAC 5 Chapter 40). There are two diesel-fired backup generators (4640 and 3950 HP respectively) located at the Surry site.

The Gravel Neck station is a natural gas and distillate oil-fired peaking plant consisting of six (6) combustion turbines. Two of the turbines are Westinghouse models rated at 281 and 363 mmBtu/hr. These two units were constructed in 1970 and are equipped with diesel starter engines rated at 2.35 and 4.59 mmBtu/hr. The remaining four (4) turbines are General Electric (GE) models constructed in July 1989, each nominally rated at 1300 mmBtu/hr. The primary fuel for the GE turbines is natural gas and the secondary fuel is No. 2 distillate oil. The four GE turbines are subject to 40 CFR 60 (NSPS) Subpart GG (*Standards of Performance for Stationary Gas Turbines*) and operate under a NSR permit dated April 23, 2002.

None of the units at the Gravel Neck / Surry Power Station are subject to the provisions of the Phase II Acid Rain Program (40 CFR Part 72), however, the facility is subject to the NO_X Budget Trading Program (9 VAC 5 Chapter 140). Two of the distillate oil storage tanks are subject to 40 CFR 60 Subpart Kb, *Standards of Performance for Volatile Organic Liquid Storage Tanks for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*.

The facility is a Title V major source due to the potential emissions of NO_X and SO_2. This source is located in an attainment area for all criteria pollutants.

COMPLIANCE STATUS

The facility is inspected at least once each year and a formal site inspection was conducted on September 29 , 2004. The source was found to be in compliance with all applicable requirements.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit	Stack No.	Emission Unit Description	Manufacturer and Date of Construction	Size / Rated Capacity
Surry Power Station				
ES - 101	EP-101	Unit A Oil-Fired Boiler	Babcock & Wilcox National Board No. 23073 1969	90.6 mmBtu/hr
ES - 102	EP-102	Unit B Oil-Fired Boiler	Babcock & Wilcox National Board No. 23074 1969	90.6 mmBtu/hr
IS - 101	IEP-101	Backup Electric Generator	Caterpillar 3600 Series Diesel Generator 1993	4640 HP (36.6 mmBtu/hr)
IS - 102	IEP-102	(3) Backup Oil-Fired Electric Generators		3950 HP each (28.3 mmBtu/hr ea.)
Gravel Neck Combustion Turbine Station				
ES - 1A (oil) ES - 1B(gas)	EP-1	Unit 1 Combustion Turbine	Westinghouse 191 August 1970	281.3 mmBtu/hr
ES - 2A (oil) ES - 2B (gas)	EP-2	Unit 2 Combustion Turbine	Westinghouse 251 August 1970	363.3 mmBtu/hr
ES - 3A (gas) ES - 3B (oil)	EP-3	Unit 3 Combustion Turbine	General Electric PG 7111-EA October 1989	1308 mmBtu/hr (gas) 1246 mmBtu/hr (oil)
ES - 4A (gas) ES - 4B (oil)	EP-4	Unit 4 Combustion Turbine	General Electric PG 7111-EA July 1989	1308 mmBtu/hr (gas) 1246 mmBtu/hr (oil)
ES - 5A (gas) ES - 5B (oil)	EP-5	Unit 5 Combustion Turbine	General Electric PG 7111-EA July 1989	1308 mmBtu/hr (gas) 1246 mmBtu/hr (oil)
ES - 6A (gas) ES - 6B (oil)	EP-6	Unit 6 Combustion Turbine	General Electric PG 7111-EA November 1989	1308 mmBtu/hr (gas) 1246 mmBtu/hr (oil)
ES - 7	EP-7	Unit 1 Starter Diesel Engine	August 1970	2.35 mmBtu/hr
ES - 8	EP-8	Unit 2 Starter Diesel Engine	December 1970	4.59 mmBtu/hr
IS-9	IEP-9	Distillate Oil Tank		3,150,000 gal
IS-10	IEP-10	Distillate Oil Tank		3,150,000 gal

Pollution Control Devices

Stack No./ Emission Unit No.	Control Equipment Description	Manufacturer and Model No.	Pollutant
EP-3/CD-3	Water Injection	General Electric PG 7111-EA	NO_X
EP-4/CD-4	Water Injection	General Electric PG 7111-EA	NO_X
EP-5/CD-5	Water Injection	General Electric PG 7111-EA	NO_X
EP-6/CD-6	Water Injection	General Electric PG 7111-EA	NO_X

EMISSIONS INVENTORY

The 2005 annual emissions (as reported in CEDS) are summarized in the following table:

2005 Pollutant Emissions (Plantwide Total)	
Pollutant	Tons Emitted
Criteria Pollutants	
PM_{10}	1.12
VOC	1.64
NO_X	29.47
SO_2	12.18
CO	4.93
Hazardous Air Pollutants (HAP's)	
THAP	< 1.0

EMISSION UNIT APPLICABLE REQUIREMENTS

The regulatory requirements for the Gravel Neck / Surry facility are embodied in the conditions of the NSR permit dated August 23, 2005, 9 VAC 5 Chapter 40 (existing source regulations), 9 VAC 5 Chapter 50 (new and modified source regulations) and the NO_X Allowance Budget Trading permit contained in Section X of the Title V permit. All Total Suspended Particulate (TSP) and Particulate Matter (PM) references are listed as PM (TSP). PM_{10} is equal to PM (TSP) in all limits. Each permit condition has been compared with the applicable requirement and found to be the same or more stringent.

FUEL BURNING EQUIPMENT

- **Babcock & Wilcox 90.6 mmBtu/hr Oil-Fired Boilers (ES-101 & ES-102)**

  Limitations

  The Babcock & Wilcox oil-fired boilers have the following applicable requirements from 9 VAC 5 Chapter 40, Part II, Article 8, *Emission Standards for Fuel Burning Equipment (Rule 4-8)*:

  - Particulate Emissions - 9 VAC 5-40-900 A.1.b

    $E = 1.0906 \times H^{-0.2594}$

    Where: E = Maximum allowable emissions ratio, expressed in lbs./mmBtu.
    H = Total capacity of fuel burning equipment installation, expressed in mmBtu/hr.

    $E = 1.0906 \times (2 \times 90.6 \text{ mmBtu/hr})^{-0.2594}$
    $= 0.283$ lb/mmBtu

  - Sulfur Dioxide - 9 VAC 5-40-930 A.1

    $S = 2.64 \times K$

Where: S = Maximum allowable sulfur dioxide emission rate, expressed in lbs/hr.
K = Total heat input at total capacity, expressed in mmBtu/hr.

- Opacity - 9 VAC 5-40-940

  Visible emissions shall not exceed 20% opacity, except during one six-minute period of not more than 60% opacity.

Monitoring & Recordkeeping:

- The permittee shall maintain records demonstrating that the sulfur and heat contents of the fuel oil being fired in the Babcock & Wilcox oil-fired boilers (ES-101 and ES-102) are such that the SO_2 emissions generated from each unit do not exceed 2.64 lb/mmBtu. The use of distillate oil that meets the specifications for No. 1 or No. 2 fuel oils, may be used to demonstrate compliance with the SO_2 emission limit, provided that fuel certifications are obtained from the fuel supplier with each shipment. These records shall be available on site for inspection by the DEQ and kept on file for the most current five-year period.
- In the event that either Babcock & Wilcox boiler (ES-101 or ES-102) is operated for a total of more than 20 cumulative hours during a calendar year, the permittee will demonstrate compliance with the opacity limits by conducting visible emissions observations (VEO's) on each boiler exhaust (EP-101 and EP-102). The frequency of these checks shall be:
  - at least one VEO per calendar year.
  - at least one VEO every 200 hours of boiler operation.
  - at least one VEO during any operability verification testing conducted on the boiler. Operability verification testing refers to any periodic tests conducted by the source to assure that the boilers could be put into operation if needed.

  Each VEO shall be performed for a sufficient period of time to identify the presence of visible emissions. If visible emissions are observed, a Method 9 certified observer shall conduct a VEO. If visible emissions do not appear to exceed 10% opacity, no action shall be required. However, if the observed visible emissions appear to exceed 10% opacity, a 6-minute Method 9 visible emission evaluation (VEE) shall be conducted. If the average opacity exceeds 20%, modifications and/or repairs shall be performed to correct the problem and the corrective measures shall be recorded. If the opacity problem persists, an 18-minute VEE shall be performed to determine compliance with the 20% opacity limit.

- **Caterpillar 3600 Series Diesel Electric Generator (IS-101)**

Limitations

The Caterpillar 3600 series diesel electric generator has the following applicable requirements:

- NSR permit dated September 27, 1993: The Caterpillar 3600 series diesel electric generator is to be used only for providing power at the Surry Power Station during interruption of service from the normal power supplier and for periodic testing.
- 9 VAC 5-50-80: Visible emissions from the diesel powered electric generator shall not exceed 20% opacity, except for one six-minute period in any one hour of not more than 30% opacity.

Monitoring & Recordkeeping:

- In the event that Caterpillar 3600 series diesel electric generator is operated for a total of more than 20 cumulative hours during a calendar year, the permittee will demonstrate compliance

with the opacity limits by conducting visible emissions observations (VEO's) on the generator exhaust (IEP-101). The frequency of these checks shall be:

- at least one VEO per calendar year.
- at least one VEO every 200 hours of generator operation.
- at least one VEO during any operability verification testing conducted on the generator. Operability verification testing refers to any periodic tests conducted by the source to assure that the generator could be put into operation if needed.

Each VEO shall be performed for a sufficient period of time to identify the presence of visible emissions. If visible emissions are observed, a Method 9 certified observer shall conduct a VEO. If visible emissions do not appear to exceed 10% opacity, no action shall be required. However, if the observed visible emissions appear to exceed 10% opacity, a 6-minute Method 9 visible emission evaluation (VEE) shall be conducted. If the average opacity exceeds 20%, modifications and/or repairs shall be performed to correct the problem and the corrective measures shall be recorded. If the opacity problem persists, an 18-minute VEE shall be performed to determine compliance with the 20% opacity limit.

- **(3) 3950 HP Diesel-Powered Backup Generators (IS-102)**

Limitations

The three (3) 3950 HP Diesel-Powered Backup Generators (IS-102), have the following applicable requirements:

- Sulfur Dioxide - 9 VAC 5-40-280 B:

  $S = 2.64 \times K$

  Where: S = Maximum allowable sulfur dioxide emission rate, expressed in lbs/hr.
  K = Total heat input at total capacity, expressed in mmBtu/hr.

- Visible Emissions - 9 VAC 5-50-20 A and 9 VAC 5-50-80
  Visible emissions from the three (3) 3950 HP Diesel-Powered Backup Generators (IS-102), shall not exceed 20% opacity, except for one six-minute period in any one hour of not more than 30% opacity. This condition applies at all times except during startup, shutdown, and malfunction.
  (9 VAC 5-50-20 A.4, 9 VAC 5-50-80)

Monitoring & Recordkeeping:

- The permittee shall maintain records demonstrating that the sulfur and heat contents of the fuel oil being fired in the three (3) 3950 HP Diesel-Powered Backup Generators (IS-102) are such that the SO_2 emissions generated from each unit do not exceed 2.64 lb/mmBtu. The use of distillate oil that meets the specifications for No. 1 or No. 2 fuel oils may be used to demonstrate compliance with the SO_2 emission limit, provided that fuel certifications are obtained from the fuel supplier with each distillate oil shipment. These records shall be available on site for inspection by the DEQ and kept on file for the most current five-year period.
- In the event that any of the three (3) 3950 HP Diesel-Powered Backup Generators (IS-102) is operated for a total of more than 20 cumulative hours during a calendar year, the permittee will demonstrate compliance with the opacity limits by conducting visible emissions observations (VEO's) on the corresponding generator exhaust (IEP-102). The frequency of these checks shall be:
  - at least one VEO per calendar year.
  - at least one VEO every 200 hours of generator operation.

- at least one VEO during any operability verification testing conducted on the generator. Operability verification testing refers to any periodic tests conducted by the source to assure that the generators could be put into operation if needed.

Each VEO shall be performed for a sufficient period of time to identify the presence of visible emissions. If visible emissions are observed, a Method 9 certified observer shall conduct a VEO. If visible emissions do not appear to exceed 10% opacity, no action shall be required. However, if the observed visible emissions appear to exceed 10% opacity, a 6-minute Method 9 visible emission evaluation (VEE) shall be conducted. If the average opacity exceeds 20%, modifications and/or repairs shall be performed to correct the problem and the corrective measures shall be recorded. If the opacity problem persists, an 18-minute VEE shall be performed to determine compliance with the 20% opacity limit.

- **Westinghouse Combustion Turbines 191 and 251 (ES-1 and ES-2)**

Limitations

The Westinghouse combustion turbines (ES-1 and ES-2) have the following applicable requirements from 9 VAC 5 Chapter 40, Part II, Article 8, *Emission Standards for Fuel Burning Equipment (Rule 4-8)*:

- Particulate Emissions - 9 VAC 5-40-900 A.1.b

  $E = 1.0906 \times H^{-0.2594}$

  Where: E = Maximum allowable emissions ratio, expressed in lbs./mmBtu.
  H = Total capacity of fuel burning equipment installation, expressed in mmBtu/hr.

  $E = 1.0906 \times (281.3 + 363.3 \text{ mmBtu/hr})^{-0.2594}$
  $= 0.204$ lb/mmBtu

- Sulfur Dioxide - 9 VAC 5-40-930 A.1

  $S = 2.64 \times K$

  Where: S = Maximum allowable sulfur dioxide emission rate, expressed in lbs/hr.
  K = Total heat input at total capacity, expressed in mmBtu/hr.

- Opacity - 9 VAC 5-40-940
  Visible emissions shall not exceed 20% opacity, except during one six-minute period of not more than 60% opacity.

Monitoring & Recordkeeping:

- The permittee shall maintain records demonstrating that the sulfur and heat contents of the fuel oil being fired in the Westinghouse combustion turbines (ES-1 and ES-2) are such that the SO_2 emissions generated from each unit do not exceed 2.64 lb/mmBtu. The use of distillate oil that meets the specifications for No. 1 or No. 2 fuel oils may be used to demonstrate compliance with the SO_2 emission limit, provided that fuel certifications are obtained from the fuel supplier with each distillate oil shipment. These records shall be available on site for inspection by the DEQ and kept on file for the most current five-year period.
- In the event that either of the Westinghouse combustion turbines (ES-1 and/or ES-2) is operated for a total of more than 20 cumulative hours during a calendar year, the permittee will demonstrate compliance with the opacity limits by conducting visible emissions

observations (VEO's) on the corresponding turbine exhaust (EP-1 and/or EP-2). The frequency of these checks shall be:

- at least one VEO per calendar year.
- at least one VEO every 200 hours of turbine operation.
- at least one VEO during any operability verification testing conducted on the turbine. Operability verification testing refers to any periodic tests conducted by the source to assure that the turbines could be put into operation if needed.

Each VEO shall be performed for a sufficient period of time to identify the presence of visible emissions. If visible emissions are observed, a Method 9 certified observer shall conduct a VEO. If visible emissions do not appear to exceed 10% opacity, no action shall be required. However, if the observed visible emissions appear to exceed 10% opacity, a 6-minute Method 9 visible emission evaluation (VEE) shall be conducted. If the average opacity exceeds 20%, modifications and/or repairs shall be performed to correct the problem and the corrective measures shall be recorded. If the opacity problem persists, an 18-minute VEE shall be performed to determine compliance with the 20% opacity limit.

- **Starter Diesel Engines for Units 1 and 2 (ES-7 and ES-8)**

Limitations

The diesel starter engines (ES-7 and ES-8) have the following applicable requirements from 9 VAC 5 Chapter 40, Part II, Article 4, *General Process Operations (Rule 4-4)*:

- Sulfur Dioxide - 9 VAC 5-40-280 B.1.a:

  $S = 2.64 \times K$

  Where: S = Maximum allowable sulfur dioxide emission rate, expressed in lbs/hr.
  K = Total heat input at total capacity, expressed in mmBtu/hr.

- Opacity - 9 VAC 5-40-320
  Visible emissions shall not exceed 20% opacity, except during one six-minute period of not more than 60% opacity.

Monitoring & Recordkeeping:

- The permittee shall maintain records demonstrating that the sulfur and heat contents of the fuel oil being fired in the diesel starter engines (ES-7 and ES-8) are such that the SO_2 emissions generated from each unit do not exceed 2.64 lb/mmBtu. The use of distillate oil that meets the specifications for No. 1 or No. 2 fuel oils may be used to demonstrate compliance with the SO_2 emission limit, provided that fuel certifications are obtained from the fuel supplier with each distillate oil shipment. These records shall be available on site for inspection by the DEQ and kept on file for the most current five-year period.
- The startup engines on the Westinghouse combustion turbines only operate for a period long enough to get the turbines spinning at a rate sufficient to initiate fuel combustion. By their nature, the starter engines only operate for a few minutes. Since visible emission evaluations frequently require longer time periods, compliance with the 20/60% opacity limit will be demonstrated by use of distillate oil that meets the specifications for No. 1 or No. 2 fuel oils and/or by proper unit operation.

- **General Electric Combustion Turbines (ES-3, ES-4, ES-5, and ES-6)**

Limitations

The GE combustion turbines have the following applicable requirements from the NSR permit dated August 23, 2005:

- Condition 3 - Nitrogen oxide (NO_X) emissions from the four turbines (ES-3, ES-4, ES-5, and ES-6) shall be controlled by the utilization of water injection when firing Natural Gas and No.2 distillate fuel oil.
- Condition 4 - Sulfur dioxide emissions from the four turbines (ES-3, ES-4, ES-5, and ES-6) shall be controlled by the use of low sulfur fuels.
- Condition 5 - Particulate matter (PM) emissions from the four turbines (ES-3, ES-4, ES-5, and ES-6) shall be controlled by the use of clean burning fuels and good combustion operating practices.
- Condition 6 - Volatile organic compounds and carbon monoxide emissions from the four turbines (ES-3, ES-4, ES-5, and ES-6) shall be controlled by the use of good combustion operating practices.
- Condition 7 - The permitted facility shall not exceed 137.2 tons of NO_X emissions or 120.1 tons of SO_2 emissions during ozone season (April 1 through October 31 of each year).
  - Condition 7A - Operating restrictions - the combustion turbine inlet air cooling system shall only be operated at ambient air temperatures above 60° Fahrenheit and the turbines shall be operated at a minimum of 60 MW electrical load.
  - Condition 7B - Recordkeeping - the permittee shall keep records of the electrical generation of the facility while the inlet cooling systems are operating.
  - Condition 7C - Reporting Requirements - the permittee shall report the actual emissions of NO_X and SO_2 emitted during ozone season of each year.
  - Condition 7D - The permittee shall determine the actual NO_X and SO_2 emissions in proportion to the electrical generation of the facility while the inlet cooling systems are operating during ozone season. The NO_X calculations shall be based on emission tests and the SO_2 calculations may be based on fuel sulfur content and actual quantities of fuel burned or actual electrical generation while the inlet cooling systems are operating during ozone season.
- Condition 8 - Short-term emission limits from the operation of each of the four GE Model PG711 simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6), while fired on natural gas, shall not exceed the limits specified below (except during start-up, shutdown and malfunction conditions):

PM / PM_{10}	0.00537 lbs/mmBtu	6.2 lbs/hr
SO_2	0.052 lbs/mmBtu	66.9 lbs/hr
VOC		2.0 lbs/hr
CO		26.2 lbs/hr
NO_X		196.9 lbs/hr
NO_X	42 ppmdv @ 15% O_2 (1-hour average)	

- Condition 9 - Short-term emission limits from the operation of each of the four GE Model PG711 simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) while fired on No. 2 distillate fuel oil shall not exceed the limits specified below (except during start-up, shutdown and malfunction conditions):

PM / PM_{10}	0.0123 lbs/mmBtu	12.5 lbs/hr
SO_2	0.307 lbs/mmBtu	380.0 lbs/hr

VOC		6.3 lbs/hr
CO		28.5 lbs/hr
NO_X		320.4 lbs/hr
NO_X	65 ppmdv @ 15% O_2 (1-hour average)	(Fuel Bound Nitrogen < 0.015% by wgt)
NO_X	77 ppmdv @ 15% O_2 (1-hour average)	(Fuel Bound Nitrogen ≤ 0.05% by wgt)
Lead		0.02 lbs/hr

- Condition 11 - Annual emissions from the operation of the four GE Model PG711 simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6)shall not exceed the limits specified below:

PM / PM_{10}	11.7 tons/yr
SO_2	245.5 tons/yr
VOC	4.9 tons/yr
CO	36.0 tons/yr
NO_X	246.0 tons/yr

- Condition 13 - The combined consumption of natural gas and No. 2 distillate oil in the four GE simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) shall not exceed the annual limits, calculated monthly as the sum of each consecutive 12 month period, as follows:
  - Condition 13 a. - Natural gas: 3,100,000,000 scf annually when firing natural gas 100% of the time.
  - Condition 13 b. - No. 2 distillate oil: 13,700,000 - 2,200,000 × (S - 0.25)/0.05 gallons annually when firing No. 2 distillate oil 100% of the time. Sulfur (S) is equal to % S by weight annual average, but not less than 0.25%.
  - Condition 13 c. - No. 2 distillate oil: 13,700,000 - 2,200,000 × (FBN - 0.015) ÷ 0.035 gallons annually when firing No. 2 distillate oil 100% of the time. Fuel Bound Nitrogen (FBN) is equal to % FBN by weight annual average, but not less than 0.015%.
  - Condition 13 d. - When the four simple cycle combustion turbines are firing both No. 2 distillate oil and natural gas, the annual consumption shall be limited by the following equation:

$$\frac{\text{(SCF Natural Gas Consumed)}}{\text{3,100,000,000 SCF}} + \frac{\text{(Gallons No. 2 Oil Consumed)}}{\text{No. 2 Oil limit from 13.b}} \leq 1$$

- Condition 14 - The approved fuels for the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) are pipeline quality natural gas (primary fuel) and No. 2 distillate fuel oil (back-up fuel). Distillate oil is defined as fuel oil that meets the specifications for Fuel Oil Numbers 1 or 2 under the American Society for Testing and Materials, ASTM 396-78 Standard Specification for Fuel Oils, or other approved ASTM method, incorporated in 40 CFR 60 by reference. A change in the fuels may require a permit to modify and operate.
- Condition 15 - The maximum sulfur content of the natural gas to be burned in the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) shall not exceed 0.06 weight percent.
- Condition 16 - The maximum sulfur content of the oil to be burned in the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) shall not exceed 0.30 weight percent per shipment. The maximum Fuel Bound Nitrogen (FBN) content of the oil to be burned in the simple cycle combustion turbine shall not exceed 0.05 weight percent per shipment.
- Condition 17 - Visible emissions (VE) from the simple cycle combustion turbine (ES-3, ES-4, ES-5, and ES-6) exhaust stacks shall not exceed ten (10) percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed thirty (30) percent opacity as determined by the Environmental Protection Agency's (EPA) Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown and malfunction.

- Condition 27 - Except as specified in the NSR permit, the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) are to be operated in compliance with all applicable requirements of 40 CFR Part 60, Subpart GG - Standards of Performance for Stationary Gas Turbines.

Monitoring & Recordkeeping:

- Condition 19 - The permittee shall monitor the sulfur content of the natural gas being fired in the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) in accordance with Subpart GG of the NSPS and the US EPA approved custom fuel monitoring schedule. These records shall be available on site for inspection by the DEQ and kept on file for the most current five-year period.
- Condition 23 - The permittee shall test the No.2 distillate fuel oil to be fired in the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) for sulfur and nitrogen content on each occasion that fuel is transferred to the storage tank, from any other source or fuel vendor. Fuel oil sulfur content shall be determined using ASTM D2880-78 or another approved ASTM method incorporated in 40 CFR 60 by reference. Fuel oil nitrogen content shall be determined by following current ASTM procedures approved by the Administrator of the US EPA. Initial test methods and changes to test methods used by the permittee to determine sulfur and nitrogen content shall be submitted to and approved by the Piedmont Regional Office (PRO) of the DEQ. Records of fuel oil sulfur and nitrogen content shall be available on site for inspection by DEQ personnel. They shall be kept on file for the most current five-year period.
- Condition 22 - A continuous monitoring system shall be installed and operated (as approved by the DEQ) to indicate/determine and record the hourly fuel consumption (in scf/hour and gallons/hour) and the ratio of water to fuel oil being fired in the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6). The system shall be accurate to within +5.0 percent and shall be approved by the DEQ, Piedmont Regional Office (PRO). The monitoring system shall be operated at all times that water is being injected into the simple cycle combustion turbines. The monitoring system shall be maintained and calibrated in accordance with the manufacturer's specifications. A 30-day notification prior to the demonstration of continuous monitoring system performance is to be submitted to the DEQ, Piedmont Regional Office (PRO). The Permittee shall maintain the records of the simple cycle combustion turbine (CT) fuel oil consumption and ratio of water to fuel oil being fired at the site. These records are to be kept on file for the most current five-year period and be available for inspection by DEQ personnel.
- 40 CFR 60.334 (a) - The owner/operator of any stationary gas turbine using water injection to control NO_X emissions shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine.
- 40 CFR 60.334 (b) and Condition 23 - The owner/operator shall monitor the sulfur content and the nitrogen content of the fuel being fired. Note that EPA has waived the nitrogen content monitoring requirement for natural gas.
- Condition 25 - The permittee shall submit quarterly excess emission reports to the DEQ Piedmont Regional Office within 30 days after the end of each calendar quarter or semi-annually as needed. Details of the quarterly reports are to be arranged with the Piedmont Regional Office (PRO). Each quarterly report shall cover, at a minimum, the dates included in the calendar quarter and provide the following information for each day in the quarter, report each hour during which the water to fuel ratio fell below that required to demonstrate compliance with the nitrogen oxides permit limit, copy of the written notification and corrective action taken.

- Condition 26 - The permittee shall maintain records of all emission data and operating parameters required to demonstrate compliance with the NSR permit. The content and format of such records shall be arranged with the DEQ Piedmont Regional Office.

- Condition 28 - The continuous water to fuel ratio monitor, the continuous monitoring data, and the quality assurance data shall, at the discretion of the Board, be used to determine compliance with the NO_X emission limits and/or relevant emission standards. Each monitor is subject to such data capture requirements and/or quality assurance requirements as specified in the NSR permit and as may be deemed appropriate by the Board (40 CFR 60.13 and 40 CFR 60 Appendix B).

- In the event that any of the simple cycle combustion turbines (ES-3, ES-4, ES-5, and ES-6) is operated for a total of more than 20 cumulative hours during a calendar year, the permittee will demonstrate compliance with the opacity limits by conducting visible emissions observations (VEO's) on the corresponding turbine exhaust (EP-3, EP-4, EP-5, and/or EP-6). The frequency of these checks shall be:
  - at least one VEO per calendar year.
  - at least one VEO every 200 hours of turbine operation.
  - at least one VEO during any operability verification testing conducted on the turbine. Operability verification testing refers to any periodic tests conducted by the source to assure that the turbines could be put into operation if needed.

  Each VEO shall be performed for a sufficient period of time to identify the presence of visible emissions. If no visible emissions are observed, no action shall be required. However, if the visible emissions are observed, a 6-minute Method 9 visible emission evaluation (VEE) shall be conducted. If the average opacity exceeds 10%, modifications and/or repairs shall be performed to correct the problem and the corrective measures shall be recorded. If the opacity problem persists, an 18-minute VEE shall be performed to determine compliance with the 20% opacity limit.

Inapplicable Requirements:

- Per Condition 20 of the NSR permit issued 8/23/2005, the fuel nitrogen content monitoring requirement of NSPS Subpart GG has been waived for natural gas.

Streamlined Requirements:

The following requirements for the gas turbines have been streamlined as indicated:

- 9 VAC 5-50-80 (Standard for Visible Emissions) is less stringent than Condition 17 of the 8/23/05 NSR permit.

- The NO_X emission limit in NSPS Subpart GG (40 CFR 60.332 (a)(1)) is less restrictive than the emission limits listed in Conditions 8 and 9 of the 4/23/02 NSR permit.

- The SO_2 standard in NSPS subpart GG (40 CFR 60.333 (a)) of 150 ppm is less restrictive than the SO_2 emission limits listed in Conditions 8 and 9 of the 4/23/02 NSR permit. The alternate limit of 0.8% sulfur by weight listed in 40 CFR 60.333 (b) is less restrictive than the fuel sulfur limits listed in Conditions 15 and 16 of the 4/23/02 NSR permit.

- **No. 2 Distillate Oil Storage Tanks (IS-9 and IS-10)**

Monitoring & Recordkeeping:

The two (2) 3,150,000 gallon distillate oil storage tanks have the following applicable requirements from NSPS Subpart Kb and the NSR permit dated April 23, 2002:

- Condition 27 - The two 3,150,000 gallon storage tanks are subject to the recordkeeping requirements of 40 CFR 60, Subpart Kb (*Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984*).

FACILITY-WIDE REQUIREMENTS

- NSR permit Condition 30 - If, for any reason, the affected facilities or related air pollution control equipment fails or malfunctions and may cause excess emissions for more than one hour, the owner must notify the Director, Piedmont Regional Office, within four (4) daytime business hours of the occurrence. In addition, the owner must provide a written statement, within 14 days, explaining the problem, corrective action taken, and the estimated duration of the breakdown/shutdown.
- NSR permit Condition 32 - In order to minimize the duration and frequency of excess emissions due to malfunctions of process equipment or air pollution control equipment, the permittee shall (1) develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance, and (2) maintain an inventory of spare parts to minimize the duration of air pollution control equipment breakdowns.
- NSR permit Condition 33 - The permittee shall maintain on site written operating procedures for the related air pollution control equipment. Operators shall be trained in the proper operation of all such equipment and shall be familiar with the written operating procedures. These procedures shall be based on the manufacturer's recommendations, at minimum. The permittee shall maintain records of training provided, including names of trainees, date of training, and nature of training.
- NSR permit Condition 35 - In the event of any change in control of ownership of the permitted source, the permittee shall notify the succeeding owner of the existence of the NSR permit by letter and send a copy of that letter to the DEQ, Piedmont Regional Office (PRO).
- NSR permit Condition 36 - The permittee shall allow authorized local, state and federal representatives to: (1) enter the premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit; (2) have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit; (3) inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of the NSR permit; and (4) sample or test at reasonable times. For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.
- NSR permit Condition 37 - Annual requirements that fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response to DEQ requests for information. The information requested may include, but is not limited to, process and production data, changes in control equipment, and operating schedules. Such requests for information will either be in writing or by personal contact. The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, § 2.1-340 through 2.1-348 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board), and 9 VAC 5-170-60 of the State Air Pollution Control

Board's Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

- NSR permit Condition 40 - A copy of the NSR permit is to be maintained on the premises of the facility to which it applies.

Testing:

The permit does not require facility-wide source testing. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit, if necessary to determine compliance with an emission limit or standard.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upsets, within one business day.

STATE-ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have not been included in the Federal Operating Permit:

- 9 VAC 5-40-340, Standard for odor;
- 9 VAC 5-60-200, Emission Standards for Toxic Pollutants from Existing Sources (Rule 6-4) et. seq.; and,
- 9 VAC 5-60-200, Emission Standards for Toxic Pollutants from New and Modified Sources (Rule 6-5), et. seq.

FUTURE APPLICABLE REQUIREMENTS

The Babcock and Wilcox boilers located at Surry are not subject to*National Emission Standards for Hazardous Air Pollutants for Industrial/Commercial/Institutional Boilers and Process Heaters* (MACT DDDDD) because they are exempted under 40 CFR 63.7491 (c) and not subject to the proposed *National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines* (MACT YYYY) because they are not a major HAP source.

The fuel monitoring and testing requirements of NSPS Subpart GG are expected to be revised in the near future to provide additional options for demonstrating compliance with the subpart.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting will be required for these emission units in accordance with 9 VAC 5-80-110. The following emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

Emission Unit No.	Emission Unit Description	Pollutant Emitted (9 VAC 5-80-720 B.)	Rated Capacity (9 VAC 5-80-720 C.)	Reg. Citation
Surry Power Station				
IS-103	Emergency Diesel Generator (Administrative Building)	NO_X	465 HP	C
IS-104	(3) Emergency Diesel-Powered Water Pumps	NO_X	261 HP/each	C
IS-105	ISFS Emergency Diesel Generator	NO_X	67 HP	C
IS-106	Security Emergency Diesel Generator	NO_X	67 HP	C
IS-107	Units 1-3 Back-up Air Compressors (3)	NO_X	5 HP/each	C
IS-108	Aboveground Fuel Oil Storage Tank	VOC	210,000 gallons	B
IS-109	(2) Underground Fuel Oil Storage Tanks	VOC	20,000 gallons/each	B
IS-110	Fuel Oil Storage Tanks	VOC	1 @ 1200 gallons 1 @ 1000 gallons 6 @ 550 gallons	B
IS-111	Fuel Oil Storage Tank (Emergency Water Pumps)	VOC	4800 gallons	B
IS-112	Fuel Oil Storage Tanks (Administration Building, ISFSI, and Security Emergency Generators)	VOC	1 @ 1500 gallons 1 @ 500 gallons 1 @ 285 gallons 1 @ 5 gallons	B
IS-113	Gasoline Storage Tank	VOC	4000 gallons	B
IS-115	Lubricating Oil Systems	VOC	1 @ 22000 gallons 2 Reservoirs (with 3 bowsers each) @ 20,500 gallons each	B
IS-116	Used Lubricating Oil Systems	VOC	1 @ 22000 gallons 1 @ 10,000 gallons 1 @ 1070 gallons	B
IS-117	Sulfuric Acid (99%) Tank	Sulfuric Acid Fumes	9401 gallons	B
IS-118	Hydrazine (35%) Tanks	Hydrazine	2 @ 345 gallons each	B
IS-119	Hydrazine (1.5%) Tanks	Hydrazine	2 @ 564 gallons each	B
IS-121	Plant Welding			A
IS-122	Degreasing Operations	VOC	2 @ 150 gallon each	B
IS-123	Gravel Roads	PM_{10}		B
IS-124	Plant Painting	VOC		A
IS-125	Grit Blasting	PM_{10}		B

Emission Unit No.	Emission Unit Description	Pollutant Emitted (9 VAC 5-80-720 B.)	Rated Capacity (9 VAC 5-80-720 C.)	Reg. Citation
IS-126	Radwaste Facility	VOC	500 SCFM Total Tank Vent System	B
IS-127	Paint Shop Solvent Recovery System	VOC	15 gallons/3.5 hrs	B
IS-128	Caterpillar Olympian Emergency Diesel Generator	NOx	72 HP	C
IS-129	Sullair Backup Compressor (Low-level Intake)	NOx	250 HP	C
IS-130	Sullair Backup Compressor (Main Station Backup)	NOx	230 HP	C
IS-131	Replacement Emergency Diesel Generator	NOx	NOx	C
IS-132	Emergency Generator (Training Center Sewage Ejector Station)	NOx	65 HP	C
Gravel Neck Combustion Turbine Station				
IS-1	Gravel Roads	PM_{10}	N/A	B
IS-2	Degreaser "Kleer Flow Cleanmaster"	VOC	N/A	B
IS-3	Unit 3-4 Glycol Heat Exchanger Systems (8 tanks)	Ethylene Glycol CAS 107211	4 each 50 gallon 4 each 125 gallon	B
IS-4	Unit 1&2 Turbine Lube Oil tanks (8 tanks)	VOC	1600 gal to 2200 gal.	B
IS-5	No.2 Fuel Oil System (6 tanks)	VOC	45 gal. to 15,000 gal.	B
IS-6	Oil/Water Separator System (3 tanks)	VOC	350 gal. to 2,000 gal.	B
IS-7	Unit 3-6 Turbine Lube Oil System (8 tanks)	VOC	250 gal. to 500 gal.	C
IS-8	Unit 1 & 2 Emergency Diesel Generator	CO, NO_X, PM_{10}, SO_2, VOC, HAP's	200 kW	C
IS-11	Unit 1 & 2 No. 2 Fuel Oil Storage Tank C	VOC	310,230 gallons	B

Regulatory citation explanations:
A - 9 VAC 5-80-720A - Listed Insignificant Activity
B - 9 VAC 5-80-720B - Insignificant due to emission levels
C - 9 VAC 5-80-720C - Insignificant due to size of emission unit

These emission units are presumed to be in compliance with all requirements of the federal Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping, or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are available for public review.

PUBLIC PARTICIPATION

A public notice ran in the Sussex-Surry Dispatch newspaper on May 10th, 2006 because the hourly emissions increase this is a significant modification. The public comment period expired without any comments being received.